# Session 2.2

##### Session 2.2 (SEMANTiCS)

#### Time: Wednesday, September 18, 2024 - 13:00 to 14:30

#### Chair: TBA

## **Talks**

### Data governance in the age of AI

| Jan Voskuil (Taxonic) |
| --- |

### 

### Semantic Smart Readiness Indicator Framework

Purpose: The Smart Readiness Indicator (SRI) is an energy rating scheme targeted at buildings to evaluate their capacity to integrate and benefit from smart technologies for enhanced energy efficiency and overall performance. Existing tools for SRI assessment and rating do not provide a standard format for data exchange. However, there are several scenarios in which a FAIR, standardised data format is beneficial, such as data exchange between building tools, comparison of different assessments, or computing statistics about buildings.

Methodology: We propose the Semantic Smart Readiness Indicator framework, consisting of an SRI information model and a SPARQL-based SRI score calculation. We follow the Linked Open Terms ontology engineering method by specifying the use case from which the requirements and competency questions are derived. We reuse existing ontologies and extend them to create the SRI ontology. Findings: The model is published according to the FAIR principles. Moreover, it is flexible to accommodate specific SRI requirements, and can be aligned with existing semantic building models to facilitate data linking and exchange. The score calculation, in turn, is composed of multiple SPARQL queries defined over the model. Value: In this paper, we describe our proposed framework, the ontology engineering process, and the evaluation of both the model and the SPARQL-based SRI calculation. All the resources are openly available for reuse.

| Stefan Bischof | Erwin Filtz | Josiane Xavier Parreira |
| --- | --- | --- |

### 

### Teaming.AI: Enabling Dynamic Knowledge Graph Representations in Process-Driven Application Domains

| Franz Krause | Heiko Paulheim | Bernhard Moser |
| --- | --- | --- |

### Assessing the FAIRness of Software Repositories using RDF and SHACL

Purpose: A previous paper proposed the usage of SHACL to assess the FAIRness of software repositories. Following this call to action, this paper introduces and discusses the changes made to QUARE, a SHACL-based tool for validating GitHub repositories against sets of quality criteria, to facilitate this task.

Methodology: An operationalization of the abstract FAIR best practices from previous work is devised to enable a FAIRness assessment based on concrete quality criteria. Afterwards, a SHACL shapes graph implementing these constraints is introduced, followed by a discussion of the efficient generation of suitable RDF representations for GitHub repositories. Improvements regarding the usability of QUARE are examined, as well. An evaluation on the FAIRness of 223 GitHub repositories and on the runtime performance of the assessment is conducted.

Findings: Trending repositories comply with fewer FAIR best practices than repositories expected to be FAIR on average. However, the latter still exhibit deficiencies, for example, regarding the correct application of semantic versioning. The low average runtime of the FAIRness assessment of respectively 3.94 and 6.20 seconds per repository permits the integration of QuaRe in, e.g., CI/CD pipelines.

Value: The FAIR principles are often mentioned as a measure to tackle the reproducibility crisis, which continues to have a significant impact on science. To implement these principles in practice, it is crucial to provide tools that facilitate the automated assessment of the FAIRness of software repositories. The enhanced version of QUARE introduced in this paper represents our proposal for this demand.

| Tobias Hummel | Leon Martin | Andreas Henrich |
| --- | --- | --- |

### 